TITLE: **Comparison between Double Injection and Targeted Intracluster Injection in Ultrasound Guided Supraclavicular Brachial Plexus Block**

BACKGROUND: Ultrasound guided Supraclavicular Brachial Plexus Block has become the anaesthetic technique of choice for upper limb surgeries. Various injection methods for local anesthetic deposition are used now-a-days but their relative efficacy has not been investigated. We investigated the efficacy of double injection and targeted intracluster injection technique in ultrasound guided supraclavicular block.

METHODS: 100 patients undergoing surgery of forearm, wrist and hand were enrolled in this randomised prospective clinical trial. They were randomised into two groups to receive either the double injection technique (Group A) or the targeted intracluster technique (Group B). The local anaesthetic drug injected was 30 mL of 0.25% bupivacaine. In Group A patients, half the volume is injected along the needle path till the corner pocket -the inferior and medial aspect of the plexus superior to the first rib and the remaining the superior aspect of the plexus. In Group B patients, half the volume was injected in the main neural cluster. Then,the satellite clusters was identified and the remaining volume was divided and injected into them in equal fractions. The primary objectives were onset of sensory and motor blockade, total anesthesia related time and success rate. Complications were also noted.

RESULTS: The block performance time was significantly shorter in Group A with a time of 7.6 minutes compared to 8.54 minutes in Group B (p=0.014). The onset of sensory and motor block of the median, ulnar, radial and musculocutaneous nerve was comparable between the groups (0.588). The anaesthesia related time was 23.98 minutes in Group A and 24.47 minutes in group B and was not significant(p=0.662). The success rate was comparable between the groups with a p value of 0.645. The incidence of paraesthesia was significantly higher (p=0.009) in Group B (30%) compared to Group A (8%). There were no incidences of pneumothorax, neurological dysfunction and local anaesthesia systemic toxicity.

CONCLUSION: Double Injection technique of Ultrasound Guided Supraclavicular Block has a faster performance time, equivalent onset time, equal success rates and less incidence of paraesthesia compared to the Targeted Intracluster technique. Hence, we conclude, that the double injection is a safe and reliable technique of ultrasound guided supraclavicular block for upper limb surgeries.

KEYWORDS: Double Injection technique, Targeted Intracluster technique, Ultrasound, Supraclavicular Block.